

Appl. No. : 10/031,818
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Claim 25. (New) A plasmid containing the transcriptional activation element of any of Claims 8, 12, and 21.

Claim 26. (New) A plasmid containing the transgene expression cassette of Claim 22.

Claim 27. (New) A transgenic plant which contains the transgene expression cassette of Claim 22.

Claim 28. (New) A transgenic plant as claimed in Claim 27 which is corn, rice, wheat, lily, chrysanthemum, cotton, soybean, beet, potato or carica papaya.

REMARKS

Amendments have been made to clarify the claimed subject matter and to correct clerical errors in the specification with respect to the SEQ ID NOS. Support for the amendment is discussed below.

As a result of this preliminary amendment, Claims 2, 9, and 13-20 have been cancelled. Claims 1, 4-8, and 10-11 have been amended. New claims 21-28 have been added. Accordingly, Claims 1, 3-8, 10-12, and 21-28 are presented for examination. No new matter is being added herewith.

The specific changes to the specification and the amended claims are shown on a separate set of pages attaches hereto and entitled **VERSION WITH MARKINGS TO SHOW CHANGES MADE**, which follows the signature page of this Amendment. On this set of pages, insertions are underlined and deletions are struck through.

Support for amendments to the specification

The following Table summarizes the changes made to the specification and the support for those changes.

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Error	Correct	Support
SEQ ID NO: 1 ---->	SEQ ID NO: 10	Figure 6
SEQ ID NO: 2 ---->	SEQ ID NO: 11	Figure 6
SEQ ID NO: 3 ---->	SEQ ID NO: 1	Specification, page 45, line 14
SEQ ID NO: 4 ---->	SEQ ID NO: 12	Figure 2
SEQ ID NO: 5 ---->	SEQ ID NO: 13	Figure 2
SEQ ID NO: 6 ---->	SEQ ID NO: 2	Specification, page 44, line 12
SEQ ID NO: 7 ---->	SEQ ID NO: 4	Figure 1
SEQ ID NO: 10 ---->	SEQ ID NO: 7	Figure 1
SEQ ID NO: 11 ---->	SEQ ID NO: 8	Figure 1
SEQ ID NO: 12 ---->	SEQ ID NO: 9	Figure 1

In summary, it is respectfully submitted that support for the amendments to the specification may be found in the present specification, especially at pages 44-45, and in Figures 1, 2, and 6. No new matter is added with this amendment.

Conclusion

Should there be any questions concerning this application, the Examiner is invited to contact the undersigned agent at the telephone number appearing below. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Sept. 18, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The section beginning at page 12, line 1 has been amended as follows:

4. A MITE-like element as defined above under any of 1 to 3 which has, as terminal inverted repeat sequences, a nucleotide sequence shown under ~~SEQ ID NO: 1~~SEQ ID NO: 10 in the 5' terminal region and a nucleotide sequence shown under ~~SEQ ID NO: 2~~SEQ ID NO: 11 in the 3' terminal region; and
5. A MITE-like element comprising the nucleotide sequence shown under ~~SEQ ID NO: 3~~SEQ ID NO: 1.

The present invention further relates to the novel MITE-like elements mentioned below under 6 and 7 (hereinafter, such MITE-like elements are sometimes referred to also as "IS1 elements" for convenience):

6. A MITE-like element which has, as terminal inverted repeat sequences, a nucleotide sequence shown under ~~SEQ ID NO: 4~~SEQ ID NO: 12 in the 5' terminal region and a nucleotide sequence shown under ~~SEQ ID NO: 5~~SEQ ID NO: 13 in the 3' terminal region, and is capable of causing duplication of the target sequence TA; and
7. A MITE-like element comprising the nucleotide sequence shown under ~~SEQ ID NO: 6~~SEQ ID NO: 2.

The paragraph beginning on page 21, line 11, has been amended as follows:

The IS2 element of the present invention is structurally characterized by containing, in the nucleotide sequence thereof, at least one nucleotide sequence represented by the formula (1): XttgcaaY (wherein X represents g or t and Y represents a or c) (~~SEQ ID NO: 7 to 10~~SEQ ID NO: 4 to 7) or the formula (2): Zatgcaa (wherein Z represents t or a) (~~SEQ ID NO: 11 to 12~~SEQ ID NO: 8 to 9) in a continuously or discontinuously repeated manner.

The section beginning on page 22, line 21, has been amended as follows:

As specific examples of the IS2 element according to the present invention, there may be mentioned the ones which have, as the terminal inverted repeat sequences, the nucleotide sequence shown under ~~SEQ ID NO: 1~~SEQ ID NO: 10 in the 5' terminal region and the nucleotide sequence shown under ~~SEQ ID NO: 2~~SEQ ID NO: 11 in the 3' terminal region. As a more specific example of the IS2 element, there may be mentioned the one having the nucleotide

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sequence shown under ~~SEQ ID NO: 3~~ SEQ ID NO: 1. The IS2 element may have one or more nucleotides substituted, added or deleted in the terminal inverted repeat sequences or in the sequence occurring between said repeat sequences if the resulting modifications remain functional equivalents substantially having the function or activity of the IS2 element itself. The MITE-like element of the present invention includes such functional equivalents as well.

As preferred functional equivalents, there may be mentioned the ones substantially having the function or activity of the IS2 element having the nucleotide sequence shown under ~~SEQ ID NO: 3~~ SEQ ID NO: 1, and causing target duplication of (A)_nG(A)_n [n being an integer not less than 1] at the site of insertion and capable of hybridizing with the above IS2 element under stringent conditions. As "stringent conditions", there may be mentioned the conditions in 1 × SSC plus 0.1% (w/w) SDS at 50°C or above over a period of 1 hour. As the functional equivalents, there may be mentioned more specifically the ones not less than 70%, preferably not less than 85%, more preferably not less than 90%, still more preferably not less than 95% homologous in nucleotide sequence with the IS2 element shown under ~~SEQ ID NO: 3~~ SEQ ID NO: 1.

2. IS1 element

The IS1 element of the present invention brings about target duplication of TA at the site of genomic gene insertion and is characterized by having, as the terminal inverted repeat sequences, the nucleotide sequence shown under ~~SEQ ID NO: 4~~ SEQ ID NO: 12 in the 5' terminal region and the nucleotide sequence shown under ~~SEQ ID NO: 5~~ SEQ ID NO: 13 in the 3' terminal region. The IS1 element of the invention is specifically a DNA having a size of not more than about 1 kb, preferably about 100 bp to 500 bp. In the light of such facts, the IS1 element of the invention can be defined as a MITE-like element, like the IS2 element mentioned above.

As the IS1 element of the present invention, there may specifically be mentioned the one having the structure shown in Fig. 2. More specifically, there may be mentioned the one having the nucleotide sequence shown under ~~SEQ ID NO: 6~~ SEQ ID NO: 2. The MITE-like element having such nucleotide sequence may have one or more nucleotides substituted, added or deleted in the terminal inverted repeat sequences or in the sequence occurring between these repeat sequences of the 5' and 3' terminal regions if the resulting modifications remain functional equivalents substantially having the function or activity of the MITE-like element itself. The MITE-like element of the present invention includes such functional equivalents as well.

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Preferred as the functional equivalents are those which substantially have the function or activity of the MITE-like element (IS1 element) having the nucleotide sequence shown under ~~SEQ ID NO: 6~~SEQ ID NO: 2 and which are at least 85%, preferably at least 90%, more preferably at least 95% homologous in nucleotide sequence with said IS1 element.

Claims 1, 4-8, 10, and 11 have been amended as follows.

1. (Amended) A miniature inverted-repeat transposable element (MITE)-like element capable of causing duplication of the target sequence: (A)_nG(A)_n [n being an integer of not less than 1] at the site of insertion thereof in a genomic gene, which has perfect or imperfect terminal inverted repeat sequences in the 5' and 3' terminal regions.

2. Cancelled.

3. (Amended 1/17/02) A MITE-like element as claimed in Claim 1 which contains, in the sequence thereof, a plurality of repetitions of at least one of the nucleotide sequences represented by the formula (1): XttgcaaY (wherein X represents g or t and Y represents a or c) or the formula (2): Zatgcaa (wherein Z represents t or a).

4. (Twice Amended) A MITE-like element as claimed in Claim 1 which has, as terminal inverted repeat sequences, a nucleotide sequence shown under ~~SEQ ID NO: 1~~SEQ ID NO: 10 in the 5' terminal region and a nucleotide sequence shown under ~~SEQ ID NO: 2~~SEQ ID NO: 11 in the 3' terminal region.

5. (Amended) A MITE-like element comprising the ~~nucleotide sequence shown under SEQ ID NO: 3~~following DNA (a) or (b):

(a) a DNA having a nucleotide sequence shown under SEQ ID NO: 1;

(b) a DNA capable of hybridizing with a DNA having a complementary sequence to the above nucleotide sequence (a) under stringent conditions and capable of causing duplication of the target sequence: (A)_nG(A)_n [n being an integer of not less than 1] at the site of insertion thereof in a genomic gene.

6. (Amended) A MITE-like element which has, as terminal inverted repeat sequences, a nucleotide sequence shown under ~~SEQ ID NO: 4~~SEQ ID NO: 12 in the 5' terminal region and a nucleotide sequence shown under ~~SEQ ID NO: 5~~SEQ ID NO: 13 in the 3' terminal region, and is

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capable of causing duplication of the target sequence TA at the site of insertion thereof in a genomic gene.

7. (Amended) A MITE-like element comprising the ~~nucleotide sequence shown under SEQ ID NO: 6~~ following DNA (a) or (b):

(a) a DNA having a nucleotide sequence shown under SEQ ID NO: 2;

(b) a DNA capable of hybridizing with a DNA having a complementary sequence to the above nucleotide sequence (a) under stringent conditions and capable of causing duplication of the target sequence TA at the site of insertion thereof in a genomic gene.

8. (Amended) A transcriptional activation element characterized by containing at least one MITE-like element as a transposable element.

9. Cancelled.

10. (Amended) A transcriptional activation element as claimed in ~~Claim 9~~ Claim 8, wherein the transposable element comprises at least one MITE-like element comprising the following DNA (a) or (b):

(a) a DNA having the nucleotide sequence shown under SEQ ID NO: 1;

(b) a DNA capable of hybridizing with a DNA having a complementary sequence to the above nucleotide sequence (a) under stringent conditions and ~~encoding for a MITE-like element~~ capable of causing duplication of (A)_nG(A)_n [n being an integer of not less than 1] at the site of insertion thereof in a genomic gene,

or a MITE-like element comprising the following DNA (c) or (d):

(c) a DNA having the nucleotide sequence shown under SEQ ID NO: 2;

(d) a DNA capable of hybridizing with a DNA having a complementary sequence to the above nucleotide sequence (c) under stringent conditions and ~~encoding for a MITE-like element~~ capable of causing duplication of TA at the site of insertion thereof in a genomic gene.

11. (Amended) A transcriptional activation element as claimed in ~~Claim 9~~ Claim 8, wherein the transposable element is a tandem coupling product from a MITE-like element comprising the following DNA (a) or (b):

(a) a DNA having the nucleotide sequence shown under SEQ ID NO: 1;

(b) a DNA capable of hybridizing with a DNA having a complementary sequence to the above nucleotide sequence (a) under stringent conditions and ~~encoding for a MITE-like element~~ capable

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of causing duplication of (A)_nG(A)_n [n being an integer of not less than 1] at the site of insertion thereof in a genomic gene,

and a MITE-like element comprising the following DNA (c) or (d):

(c) a DNA having the nucleotide sequence shown under SEQ ID NO:2;

(d) a DNA capable of hybridizing with a DNA having a complementary sequence to the above nucleotide sequence (c) under stringent conditions and ~~encoding for a MITE-like element~~ capable of causing duplication of TA at the site of insertion thereof in a genomic gene.

12. (reiterated) A transcriptional activation element comprising a DNA having the nucleotide sequence shown under SEQ ID NO:3.

Claims 13-20. Cancelled.

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